PATENT & TRADEMARK OFFICE
DEC 21 2004

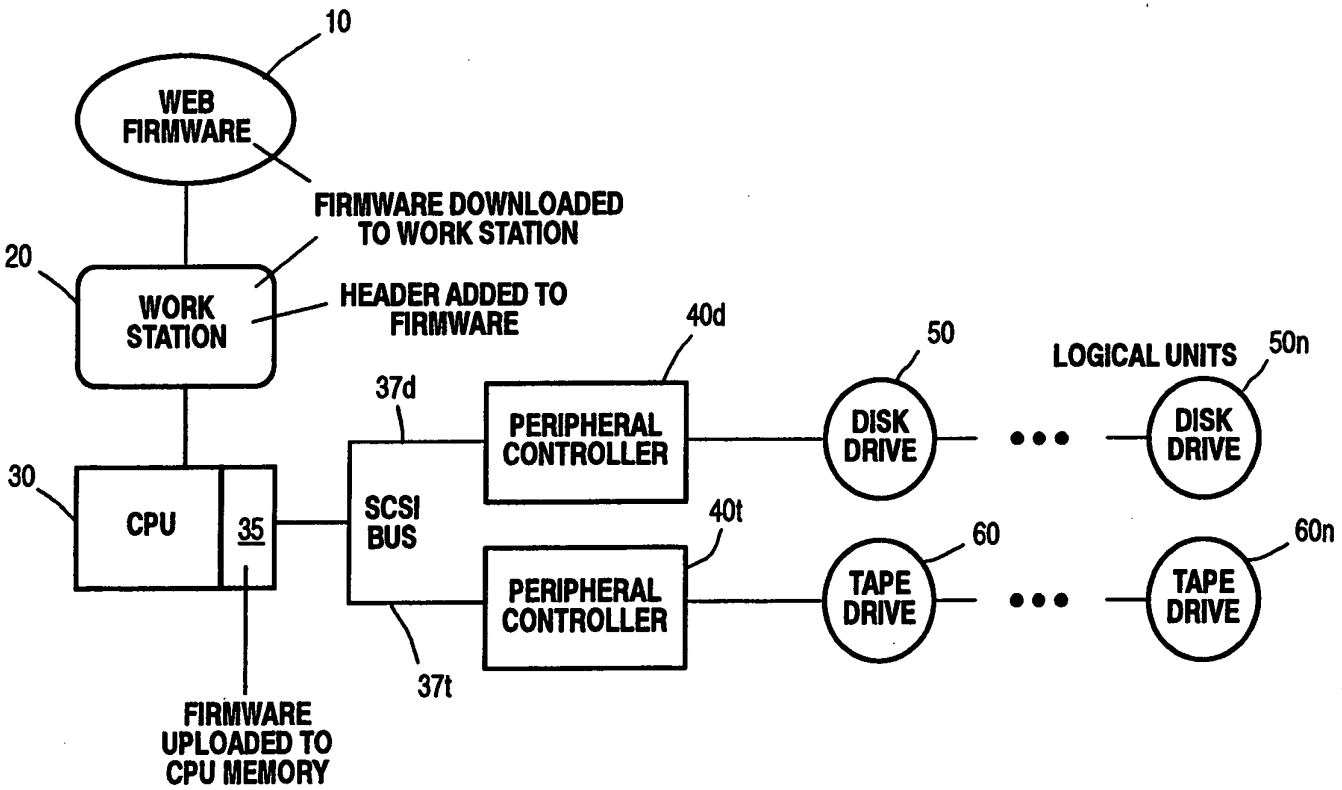

Figure 1A

(Prior Art)

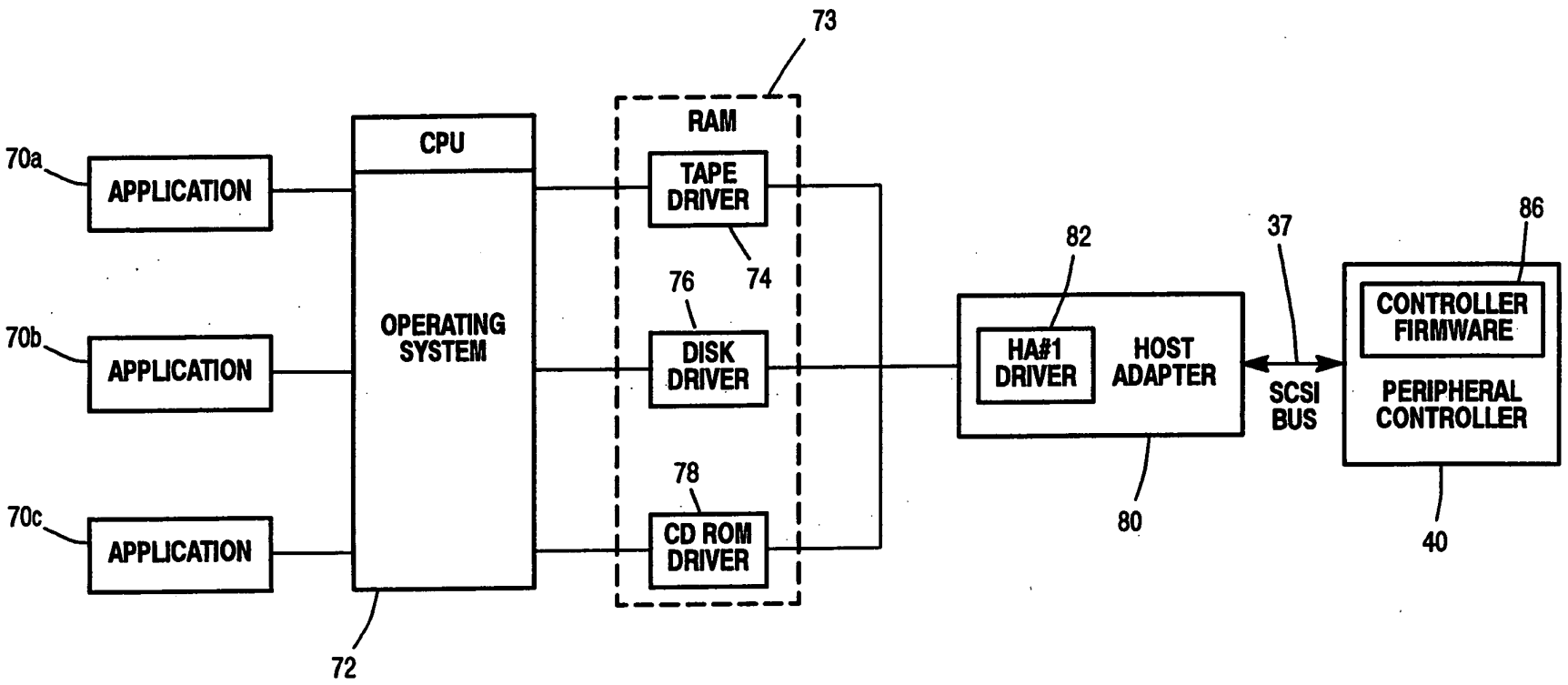

Figure 1B

(Prior Art)

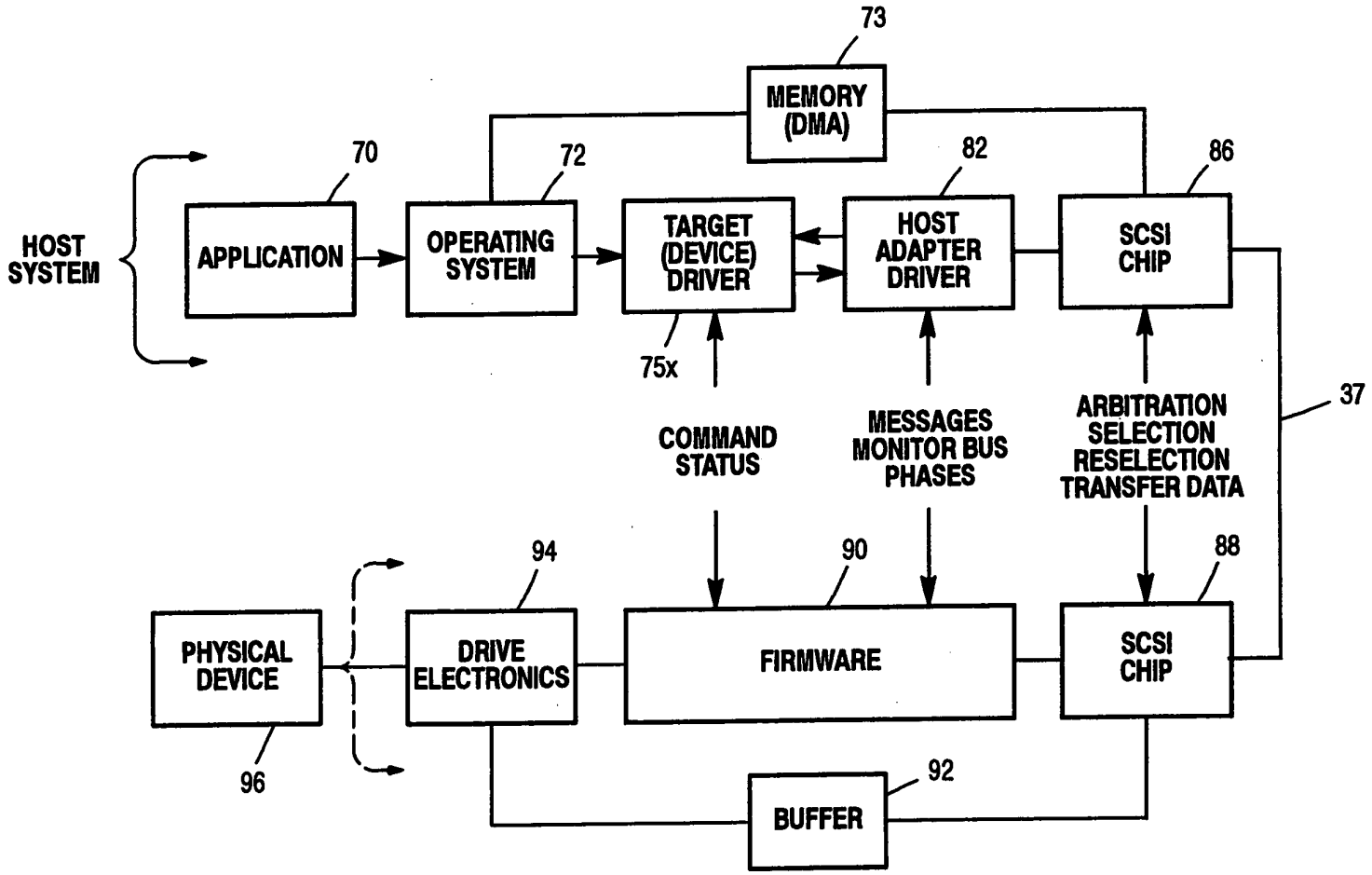

Figure 1C

(Prior Art)

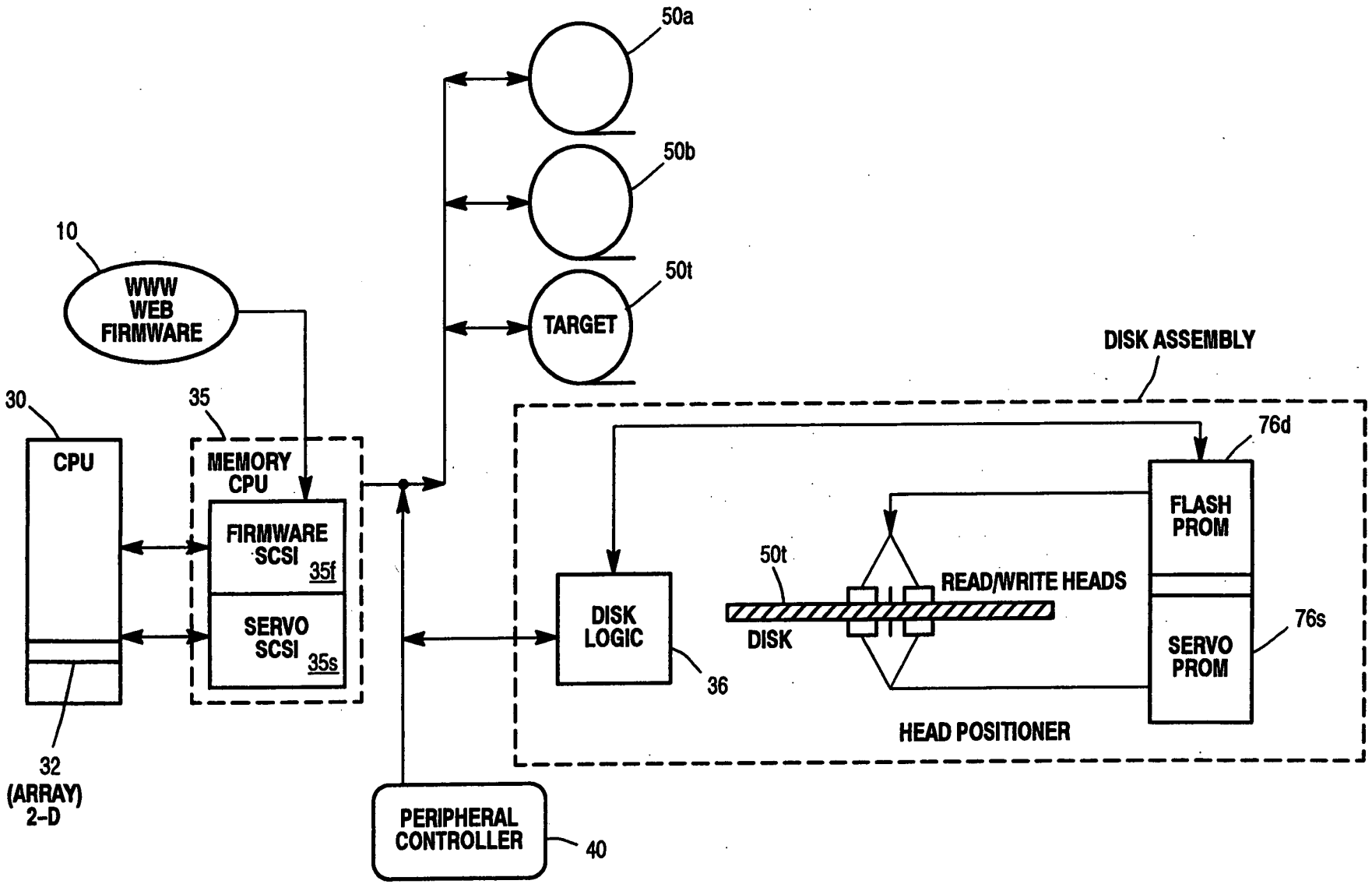

Figure 1D

(Prior Art)

TYPICAL TWELVE-BYTE CDB

(TABLE 23)

	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
BYTE 0	OPERATION CODE							
BYTE 1	LOGICAL UNIT NUMBER			RESERVED				
BYTE 2	(MSB)							
BYTE 3	LBA = LOGICAL BLOCK ADDRESS (IF REQUIRED)							
BYTE 4								
BYTE 5								(LSB)
BYTE 6	(MSB)							
BYTE 7	TRANSFER LENGTH (IF REQUIRED)							
BYTE 8	PARAMETER LIST LENGTH (IF REQUIRED)							
BYTE 9	ALLOCATION LENGTH (IF REQUIRED)							(LSB)
BYTE 10	RESERVED							
BYTE 11	CONTROL BYTE							

Figure 2

(Prior Art)

WRITE BUFFER COMMAND

BIT / BYTE	7	6	5	4	3	2	1	0
0	OPERATION CODE (3Bh)							
1	RESERVED					MODE		
2	BUFFER ID							
3	(MSB)							
4	BUFFER OFFSET							
5								(LSB)
6	(MSB)							
7	PARAMETER LIST LENGTH							
8								(LSB)
9	CONTROL							

Figure 3

(Prior Art)

WRITE BUFFER MODE FIELD

MODE	DESCRIPTION	IMPLEMENTATION REQUIREMENTS
000b	WRITE COMBINED HEADER AND DATA	OPTIONAL
001b	VENDOR-SPECIFIC	VENDOR-SPECIFIC
010b	WRITE DATA	OPTIONAL
011b	RESERVED	RESERVED
100b	DOWNLOAD MICROCODE	OPTIONAL
101b	DOWNLOAD MICROCODE AND SAVE	OPTIONAL
110b	DOWNLOAD MICROCODE WITH OFFSETS	OPTIONAL
111b	DOWNLOAD MICROCODE WITH OFFSETS AND SAVE	OPTIONAL

Figure 4

(Prior Art)

OPERATION CODE

BITS	7	6	5	4	3	2	1	0
BYTE 0	GROUP CODE			COMMAND CODE				

GROUP CODE FIELD

GROUP	BIT 7	BIT 6	BIT 5	NUMBER OF COMMAND BYTES
0	0	0	0	SIX
1	0	0	1	TEN
2	0	1	0	TEN (NEW IN SCSI-2)
3	0	1	1	RESERVED
4	1	0	0	RESERVED
5	1	0	1	TWELVE
6	1	1	0	VENDOR SPECIFIC
7	1	1	1	VENDOR SPECIFIC

Figure 5

(Prior Art)

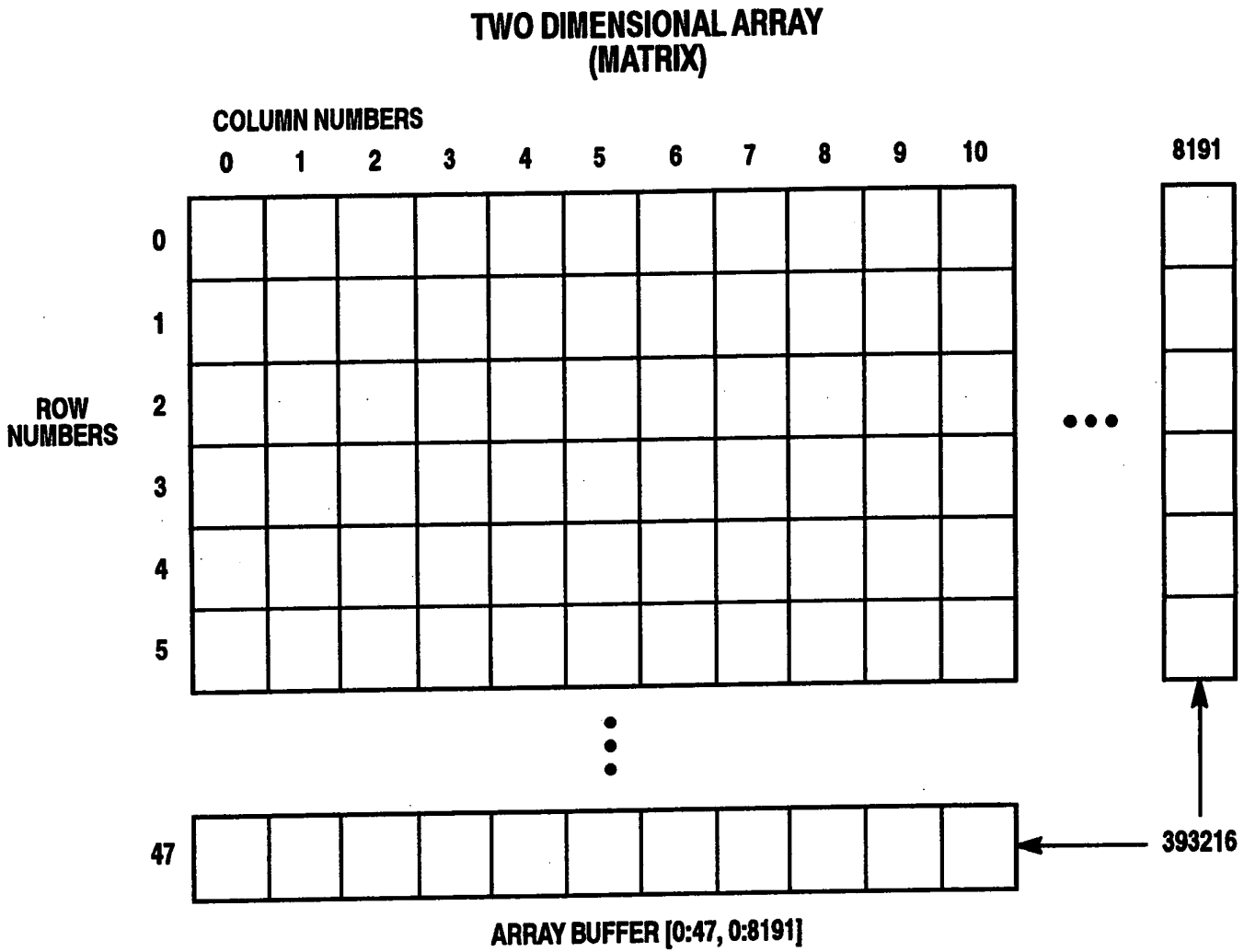
TWO DIMENSIONAL ARRAY
(MATRIX)
COLUMN NUMBERS
0 1 2 3 4 5 6 7 8 9 10
8191
ROW
NUMBERS
0
1
2
3
4
5
47
393216
ARRAY BUFFER [0:47, 0:8191]

Figure 6

DFAST

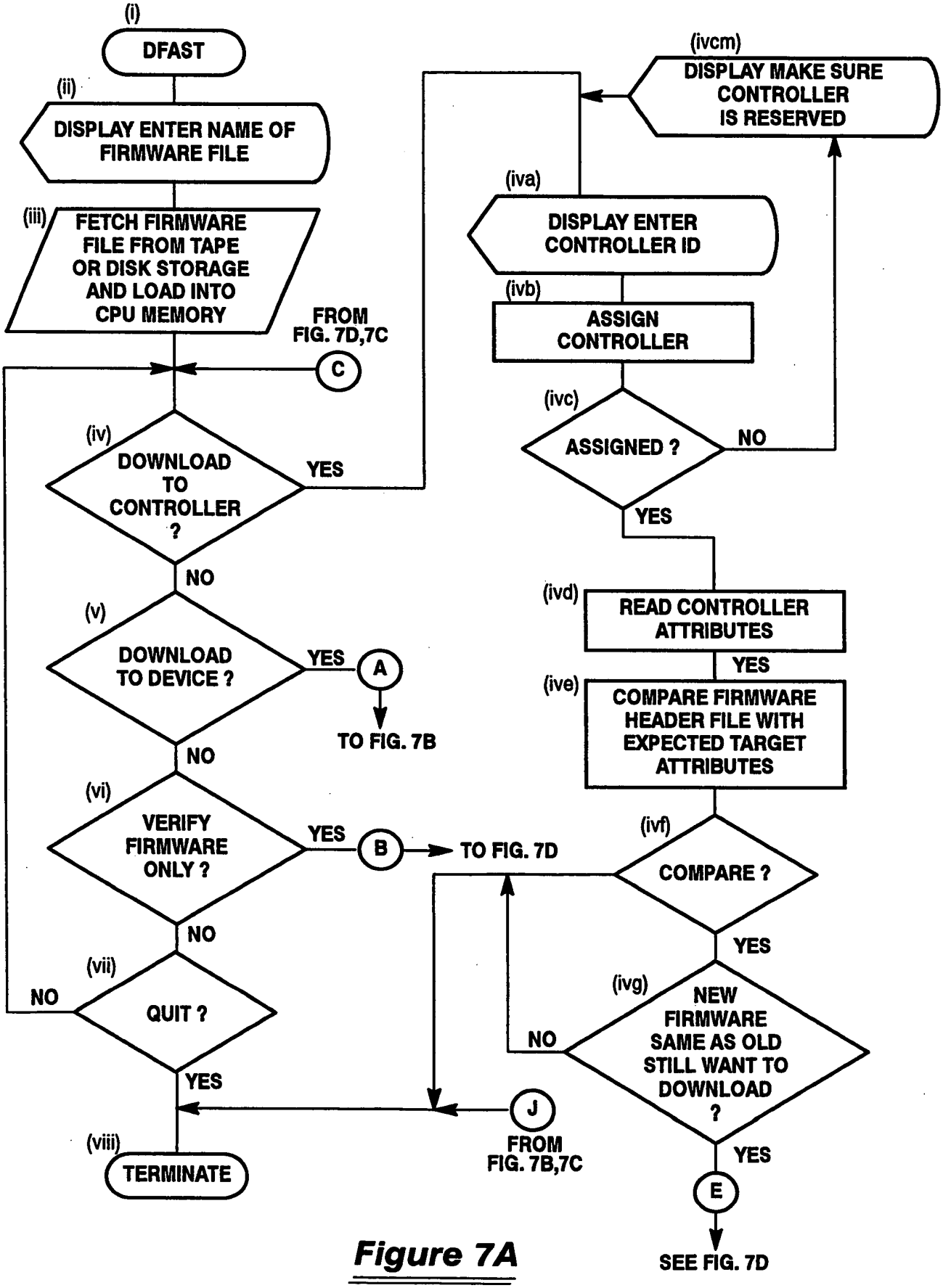

Figure 7A

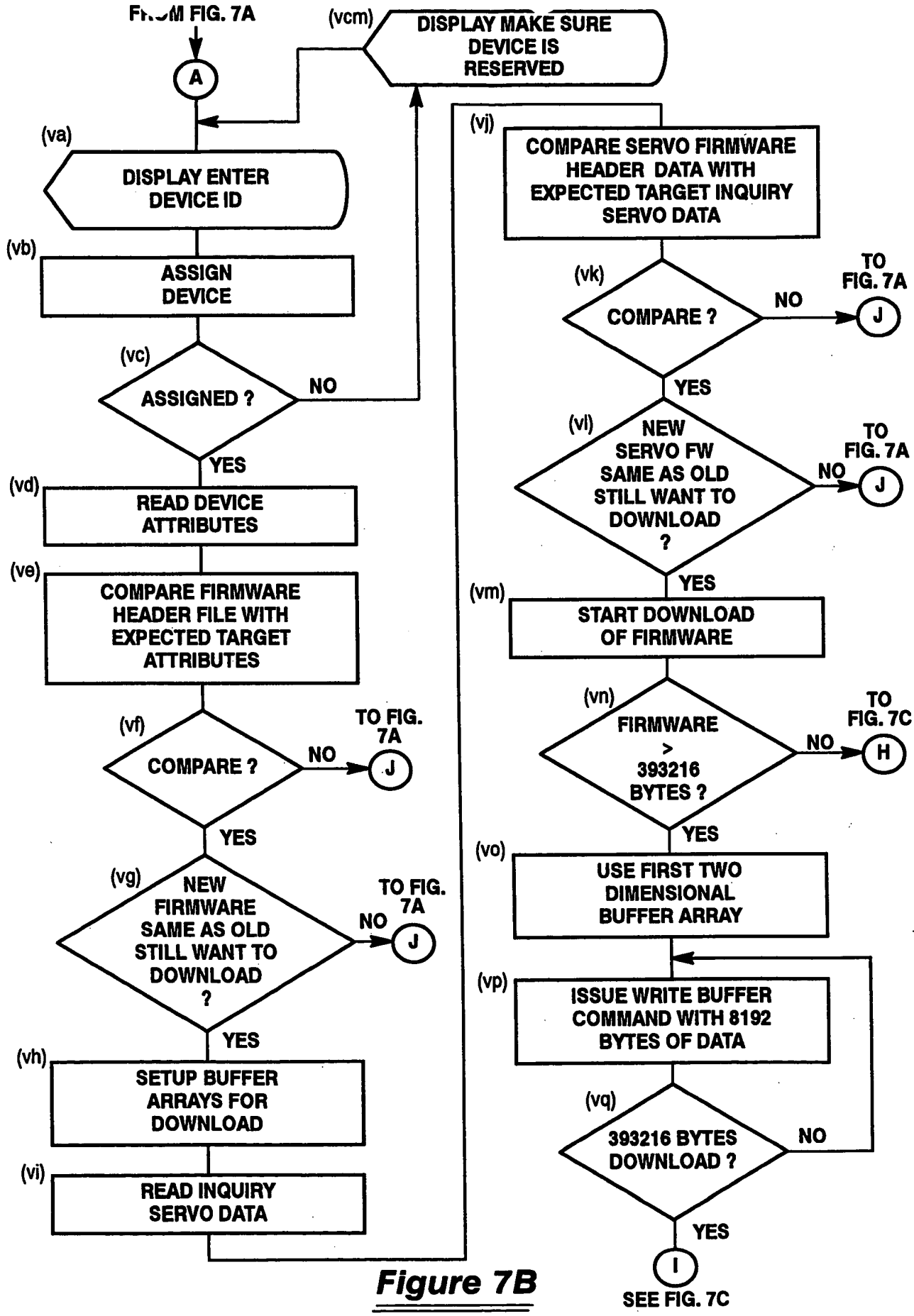
FROM FIG. 7A
A
(va)
DISPLAY ENTER DEVICE ID
(vb)
ASSIGN DEVICE
(vc)
ASSIGNED ?
NO
YES
(vcm)
DISPLAY MAKE SURE DEVICE IS RESERVED
(vd)
READ DEVICE ATTRIBUTES
(ve)
COMPARE FIRMWARE HEADER FILE WITH EXPECTED TARGET ATTRIBUTES
(vf)
COMPARE ?
NO
TO FIG. 7A
J
YES
(vg)
NEW FIRMWARE SAME AS OLD STILL WANT TO DOWNLOAD ?
NO
TO FIG. 7A
J
YES
(vh)
SETUP BUFFER ARRAYS FOR DOWNLOAD
(vi)
READ INQUIRY SERVO DATA
(vj)
COMPARE SERVO FIRMWARE HEADER DATA WITH EXPECTED TARGET INQUIRY SERVO DATA
(vk)
COMPARE ?
NO
TO FIG. 7A
J
YES
(vl)
NEW SERVO FW SAME AS OLD STILL WANT TO DOWNLOAD ?
NO
TO FIG. 7A
J
YES
(vm)
START DOWNLOAD OF FIRMWARE
(vn)
FIRMWARE > 393216 BYTES ?
NO
TO FIG. 7C
H
YES
(vo)
USE FIRST TWO DIMENSIONAL BUFFER ARRAY
(vp)
ISSUE WRITE BUFFER COMMAND WITH 8192 BYTES OF DATA
(vq)
393216 BYTES DOWNLOAD ?
NO
YES
I
SEE FIG. 7C

Figure 7B

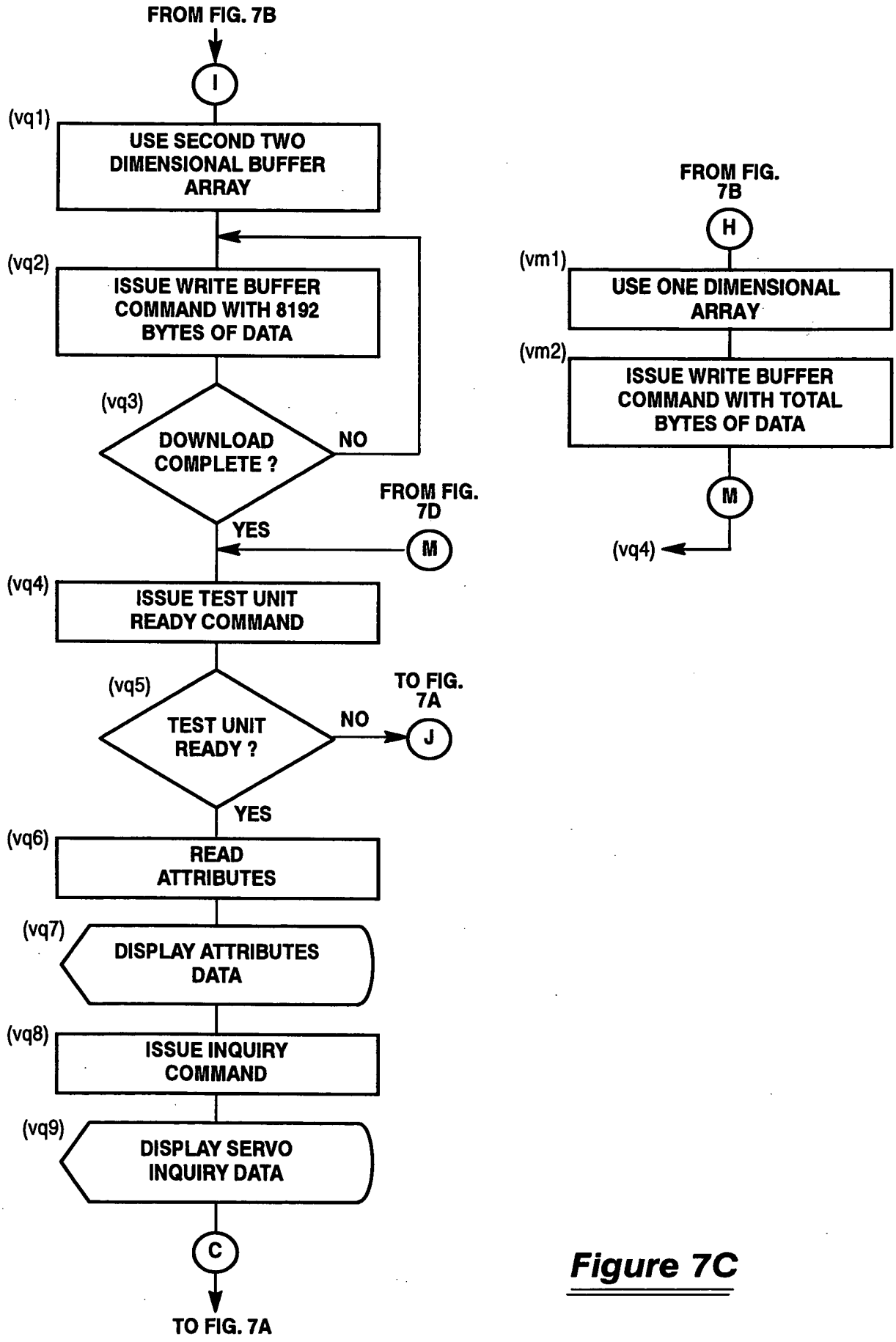
FROM FIG. 7B
I
(vq1)
USE SECOND TWO DIMENSIONAL BUFFER ARRAY
(vq2)
ISSUE WRITE BUFFER COMMAND WITH 8192 BYTES OF DATA
(vq3)
DOWNLOAD COMPLETE ?
NO
YES
FROM FIG. 7D
M
(vq4)
ISSUE TEST UNIT READY COMMAND
(vq5)
TEST UNIT READY ?
NO
TO FIG. 7A
J
YES
(vq6)
READ ATTRIBUTES
(vq7)
DISPLAY ATTRIBUTES DATA
(vq8)
ISSUE INQUIRY COMMAND
(vq9)
DISPLAY SERVO INQUIRY DATA
C
TO FIG. 7A
FROM FIG. 7B
H
(vm1)
USE ONE DIMENSIONAL ARRAY
(vm2)
ISSUE WRITE BUFFER COMMAND WITH TOTAL BYTES OF DATA
M
(vq4)

Figure 7C

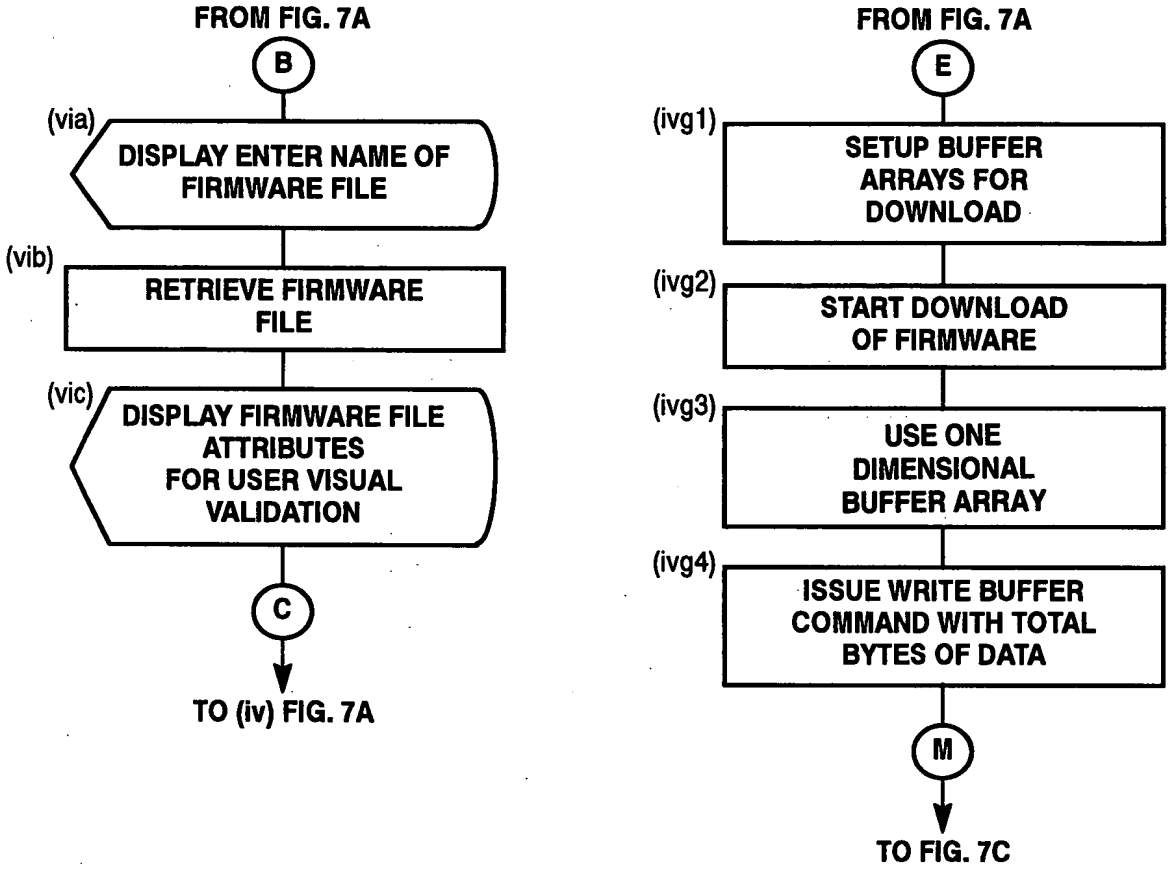
FROM FIG. 7A
B
(via)
DISPLAY ENTER NAME OF FIRMWARE FILE
(vib)
RETRIEVE FIRMWARE FILE
(vic)
DISPLAY FIRMWARE FILE ATTRIBUTES FOR USER VISUAL VALIDATION
C
TO (iv) FIG. 7A
FROM FIG. 7A
E
(ivg1)
SETUP BUFFER ARRAYS FOR DOWNLOAD
(ivg2)
START DOWNLOAD OF FIRMWARE
(ivg3)
USE ONE DIMENSIONAL BUFFER ARRAY
(ivg4)
ISSUE WRITE BUFFER COMMAND WITH TOTAL BYTES OF DATA
M
TO FIG. 7C

Figure 7D